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broad treatment, large fund of information, and a pleasant style are concerned, readily holds its own among its kind. It is, as the author points out, the fruit of twenty-five years of arduous studies and a long record as leader of an agricultural institution, and will, no doubt, prove a very welcome contribution to the rather scant supply of literature upon the subject and an appreciated source of information to the students of political economy in this country as well as abroad.

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*Les systèmes de culture; Les spéculations agricoles.* Par FRANÇOIS BERNARD. Paris: Masson & Cie, 1898. 8vo, pp. xi+392.

*Géographie agricole de la France et du monde.* Par J. DU PLESSIS DE GRENÉDAN. Paris: Masson & Cie, 1903. 8vo, pp. xx +424.

*Précis de géographie économique.* Par MARCEL DUBOIS et J. G. KERGOMARD. Paris: Masson & Cie, 1903. 8vo, pp. viii+837.

THE book of Professor Bernard deserves more space than its bulk indicates, because it is interesting, and still more because American agriculture is interested in precisely such literature as this. The strenuous exertions that are now making to extend agricultural education in this country and to adapt methods of agriculture to the highest economic achievement make it extremely desirable that American students and the well-read American farmer should have at their disposal a systematic and inspiring work on the economics of agriculture, which should not repel by an array of statistics, but should invite by its consistency and by its well-maintained point of view. Such a book is that of Professor Bernard, and it is much to be regretted that it has not long ago been translated and adapted to conditions prevailing in the United States.

The only work written for American students which professes to cover the ground of rural economics, with which the reviewer is acquainted, is simply a restatement of orthodox economics with the rural motive written in at certain places, and with some rural statistics interpolated, but not incorporated into the text.

Far different is Professor Bernard's conception of rural economics. It is not to be a rehash of political economy, but an array of rural economic interests, treated of course with reference to accepted princi-

ples, but formulating precepts that present themselves as distinctly agricultural. Instead of chapters on the theory of rent, wages, and profits, on exchange, banking, and money, and on the general principles of saving and consumption, we have chapters on "The Modern Agricultural Problem," on "The History of Agricultural Economics," on "The Classification of Systems of Cultivation," on "Analysis of the Systems of Cultivation," "Population and Wages," "Large and Small Farms," "Laws, Customs, and Markets," "The Superintendence of Cultivation," "Agricultural Associations and Combinations," "Credit," "Fertilizers," and "Machinery;" and in a second part we have treated the economics of "Forests," of "Cattle Feeding," of "Fallows," of "Grain-Raising," of "Raw Materials," of "Grain-Growing," etc. While from the point of view of an orthodox political economy these titles may seem a little incongruous, still when a person has gone over the book carefully he is satisfied with the general view of the economic interests of agriculture, and knows that he has not read a mere work on technical agriculture, but one in the distinct field of agricultural economy.

According to our author, while most of the accepted economic titles are pertinent also to the interests of agriculture, the real problem of economic agriculture is to find out what cultivation pays in a given environment. Previous writers have endeavored to solve this problem and, as is usual in new sciences, they have first sought to delimit the field by establishing some test or standard. These studies have led to an attempt to classify the systems of culture historically—an attempt which has shunted rural economy from its true analytic purpose. No matter how much authors have attempted to classify cultivation according to technical systems, they have failed to reach the true economic idea, but have always been dominated more or less by the historical and biological idea.

The true economic idea takes as a standard the gross product and, be it understood, not the technical gross product, but the economic gross product or the value of the gross product. Now, since the same gross product is given by entirely different technical systems, according to whatever happens to be the agricultural environment, the state of the market, the facilities of culture, the accumulation of capital, or the facilities of agricultural credit, it follows that there can be no economic standard inherent in any system of culture, but that the economic standard is to be found solely in the value of the gross product.

Of course, the economic standard is not to be found in the value of the net produce, because competition renders theoretically a uniform rate for all business, agricultural or not. The adaptation of the *system of culture* is that which enables a greater produce to be raised from a given area; it is that, therefore, which enables a greater investment and a greater total profit to be made upon a given area; but presumably it does not, in the long run differentiate the rate of profit in agriculture from that in other industries.

The problem of the farmer then, is to find out what system of culture will give the greatest gross product, in other words, will allow the largest amount of farming to be done, particularly in that section of country where he finds himself. The function of agricultural economics is to assist the farmer in forming judgments on this matter, and consequently a work on agricultural economics should treat of the principal kinds of culture and of the environments in which they are severally found to be remunerative more than other systems; and again, a work on agricultural economics takes up certain interests that particularly affect the farmer, such as the economic organization of the farm and the different systems of farming to be adopted according as the farmer has a large or small capital, or according as he is able to carry on a large or small farm relatively to the practice in his district.

It is wholesome for the American to notice the arguments brought forward in favor of the advantages of European agriculture. Assuredly, agriculture would not be practiced in Europe if it did not pay. The enormous yield of crops in Europe indicates quite a material basis for agriculture, looked at from a business point of view. Comparing France with the United States, Professor Bernard suggests that the high national debt of France is offset by the large local debt of the United States. A cursory glance at statistics would seem to indicate, however, that the compensation is far from complete. Taking the statement in Adams's *Science of Finance*, that in France local expenditure and national expenditure are in the proportion 30 : 70, while in the United States they bear the reverse proportion 61 : 39, and assuming that that proportion still holds good, the reviewer finds that the national and local debts of France together would be about \$215 per capita, while in the United States the same sum would be only about \$37 per capita. This is on the basis that the national debt of France is \$150 per capita and that of the United States is \$14 per capita, as given in the monthly summary of commerce and finance for March, 1901 (National Debts of the World).

Against the standing army of France, Professor Bernard sets over the high wages in the United States; against higher taxation in France, he sets over, the useful application of it to education and public works and the (by some) supposed beneficent influence of protection on French agriculture; against cheap transportation in and from the United States, he sets over the absence of transportation charges across the ocean, and the rule that competition is bound to equalize national conditions by raising land values in the United States, by raising wages and taxes there, and even by raising rates of transportation there. Moreover, in the United States speculation is more dominant and the speculators get a bigger share of the produce.

With regard to the discussion as to the cause of the rise of land values, Professor Bernard is quite positive they are a sign and result of profit from farming. He gives instances to show good profit from many French farms. On population, he thinks that the real reason the French population is stationary is because France is essentially an agricultural country, and not necessarily because of the subdivision of properties. He thinks that the law cannot enforce an extreme subdivision of property, but that the estates that have been partitioned will be brought together by rational economic influences in spite of the law.

France is looked upon as a country of small holdings; a discussion, therefore, of the relative merits of large and small farming (which is the question really meant when large and small holdings are spoken of) is especially interesting in a French book. From the nature of the crops and from other causes small culture is less exposed to financial crises than large culture. It suffers, however, a great disadvantage in the purchasing of machinery and especially of fertilizers. Here the *agricultural syndicates* come to the help of the farmer. They are the most important feature of recent French agriculture. They are chiefly formed under the law on professional syndicates of March 21, 1889, which was originally designed to favor the association of small capitalists and manufacturers, and which embraced agricultural interests only by a chance motion introduced at the eleventh hour in the senate by M. Oudet. He moved that the words *Intérêts agricoles* should be introduced. The law, however, has become chiefly a means of agricultural organization; and in this matter it would appear that the French peasant is far ahead of the American farmer. However, the agricultural syndicates have not been very successful when organized for sale. The French peasant resembles the American farmer in think-

ing that his pig and his grain are better than his neighbor's and should bring bigger prices. In purchasing, the syndicates have been quite successful, especially in buying artificial fertilizers, the trade in which had been a scene of riotous scamping, amounting to a real oppression of the peasant, before the syndicates took a hand in it.

As to credit, its use has become necessary through introduction of business principles into farming. The length of the production period being different in agriculture from what it is in manufactures and commerce, commercial paper created from the farmer's point of view would run for a much longer period than the usual practice—say, for a year. Hence it is necessary that credit institutions should be created which may absorb the farmer's paper and convert it into a commercial paper of standard time period. The agricultural classes, therefore, stand in need of a special class of banking institutions which may act as intermediaries between them and the world of finance.

This difficulty was met by the law of November 5, 1894, which authorized syndicates to be formed with the object of doing a banking business for the farmers. Moreover, where the farmers succeed in getting a certain proportion of the loans they want, through private sources, the government steps in and offers to supply the remainder. The fund from which the government is enabled to promise such largesses to agriculture is the bonus paid by the Bank of France for the renewal of its charter.

In general the system of letting on shares is practiced where the gross produce is small; but where that exceeds 150 francs per hectare, farming on shares is no longer indicated; on the other hand, when farming on shares seems advisable, the rate of profit must be much higher than otherwise, because that system involves a much greater labor of superintendence. The distinction between net profit and gross profit thus appears plainly:

In the choice of a system of culture on a given farm, the object is not first and foremost to attain a maximum value of produce sold: the highest gross produce is not necessarily the most advantageous for the farmer; the greatest *profit* is what must be aimed at.

Mr. Bernard is professor of rural economy at the national school of agriculture at Montpellier, which is situated on the same grounds with the University of Montpellier, although it is an entirely distinct institution.

His book is well supplemented by the agricultural geography of Du Plessis de Grenédan, professor at the higher school of agriculture of

Angers. Bernard's book discusses the general principles to which the agriculturist must adapt his culture if he cares to do a profitable business. The book of Du Plessis professes to give the necessary data according to which the principles enounced by Bernard may be applied. The book is illustrated by 118 charts, mostly maps, which indicate by shaded surfaces and lines the limits of the geographical conditions under discussion. Needless to say that the indications are much more extensive and specific for France and its colonies than for the rest of the world, the former occupying 270 pages and the latter 140. Evidently the French division of the book is the really serious one, and there can be no doubt but that the treatment is thorough. In order to understand the purpose of this book, let us suppose a farmer located in any part of France, say La Beauce. He does not need to have the soil examined, nor to consult the weather bureau, nor to look about to see what his neighbors are doing. Just let him sit down and consult the charts of Professor Du Plessis, and he will find that La Beauce is a fertile plain elevated less than 200 meters above the sea in the Basin of Paris, a tertiary formation abounding in lime, and thus calculated to give a high yield by the mere addition of animal fertilizers, for does not Professor Bernard say (p. 207) that :

The application of fertilizers requires capital and judgment; for instance, nitrogen in organic compounds (manures, bones, blood, etc.) must return to its original state, nitrogenous or ammoniacal, before it can be absorbed by plants; but nitrification occurs naturally in the soil only under the influence of certain ferments and in presence of lime. In soils poor in lime, like granite soils, therefore, organic manures do no good.

Our peasant also finds that the average winter temperature is 1° centigrade and the summer temperature between 18° and 19°, and that he is not far within the northern limit for the growing of grapes; that the density of population is from twenty to sixty to the square kilometer; that he is near the Loire, a river generally navigable, although it is subject to enormous fluctuations, varying from 25 cubic meters per second in low water to 9,000 cubic meters in high water. If, however the river is too low, he can obtain his building materials and fertilizers by canal connecting with the Seine, or through the canal De Bourgogne connecting with the Saône and the Rhone toward the south, or toward the northeast connecting by various routes with the Rhine. He finds that the soil of La Beauce is rich, cultivable land, in contradistinction to the lands of moderate fertility that lie south of the Loire and extend northeast in a broad belt to the German frontier. He can sell

his land for from 1,830 to 3,000 francs the hectare. It is adapted to the raising of sugar beets probably, but not to the raising of fibers, tobacco, or plants for perfumes. As to grain-growing, most of the interior of France is adapted to that, except a narrow strip running from La Sologne, in the Orléanais, northeast through Champagne, and excepting also the central height of land. Probably his land is adapted to wheat and oats, but not to the growth of maize, which is cultivated about up to the Loire in the west and as high as Lorraine in the east, outside of the central height. One would hardly cultivate buckwheat in La Beauce, nor millet. In fact, wheat is the main crop. (See Fig. 41, III.) That country is so fertile that it contains no natural pasturage, being all under plow. At the same time, it is well supplied with artificial meadows. Butter and cheese are produced there, but it is a little out of the district for fattening animals for beef. On the other hand, lying just south of Rambouillet, where is located the national shepherd school, it is quite appropriately accustomed to the raising of sheep. Here one may profitably raise rabbits for the market and also chickens.

All these things and many more may be learned about every district in France from this excellent book and its charts.

A traveler in France who has a practical turn of mind is often dissatisfied, on getting out at the station and opening his guide-book, to find little explanation except with relation to architecture and art. It is true that Baedeker does give some economic and industrial information, but not in a way to satisfy the economically curious. Armed with a book like that of Du Plessis, and familiar with its method, one might derive infinitely more satisfaction from a tour in what is undoubtedly the most beautiful country on earth. It incloses within its boundaries almost every variety of agriculture and every variety of soil. The wonder is that all of these different kinds of climate and agricultural opportunity seem to be the best of their kind. One becomes contaminated with the satisfaction of the Frenchman. Even the stony wastes of La Crau and La Camargue, and the difficult steppes of the Alps and the Cévennes, seem to afford a spontaneous bounty at the behest of the Frenchman's jingoism. The cold facts seem to be that France possesses a great deal of very rich soil, but also a good deal quite the opposite, and that the universal productivity of its agriculture is due to secular civilization.

There is some exception of course to the equability of the various climates of France. The winds that blow up the valley of the Rhône

and Saône are famous. Who has not heard about the bridge on the Rhône at Avignon, and the Mistral,

which blows cold and violent over Languedoc and Provence? It is a north-west wind that gets colder and harder as it crosses the summits of the central plateau and enters the valleys that open onto the plains of the Rhône (p. 34).

On the French coast, many large districts have been reclaimed from the sea, such as Mont St. Michel, some of the islands in the Loire, the neighborhood of La Rochelle and Rochefort, and especially the banks of La Gironde. La Gironde forms the mouth of the rivers Garonne and Dordogne, and here and on the opposite side of France, in Burgundy, is raised the highest-priced wine. Maps of all the best wine districts are given, with a particular description of the value of the wine and of the land, the kind of grapes grown, whether native stock or grafted to American stock, in order to withstand the phylloxera. It must be remembered that France produces one-sixth of the wine of the world. A single one of the famous vineyards of France furnishes more wine than the whole of Spain or Italy.

Agricultural geography, however, does not stop at mere physical environment. It treats also of agricultural capital, which consists chiefly of the value of the land under cultivation. "This value has decreased considerably since 1880; perhaps it has now ceased going down; but it is very doubtful if it goes up again soon." The taxes amount, on an average, to 32 per cent of the clear profit of the capital engaged in agriculture. The geography goes farther and attempts to strike a balance-sheet for the whole country based on statistical data, and comes to the conclusion that agriculture altogether brings a profit of just about 2.40 francs per hundred.

It is worth noticing also that a part of this net profit is absorbed on one side by the interest on loans other than mortgages, and on the other hand, by the charge of maintenance of and gradual paying for buildings—charges that did not enter into the calculation. Agricultural France is rich; but it is plain that it is passing through a difficult crisis which is aggravated by the needs of the state and by the financial disorder which makes these needs insatiable.

The third book, the *Economic Geography* of Professors Du Bois and Kergomard, forms a fitting culmination of the series. The question is no longer one of economic principles in agriculture, nor simply of the economic data contained in or needful for agriculture; but this time the design is to give an economic description of the world. Of

course, if this idea were fully carried out, the economic geography should contain everything contained in the agricultural geography in addition to all the necessary facts connected with the manufactures. Naturally, on the geographic side it is not so strong as the economic geography, nor can such a book take up any more thoroughly the manufactures. Certainly if any one in the world could make such a work interesting, it would be a Frenchman; and it is not to be denied that a certain satisfaction can be obtained from a reading of this book. At the same time, the attempt to convey so much information in one book suffers from a weakening of the point of view. The agricultural geography was strong in this direction; for the point of view was not only economic, but agricultural. Professor Du Bois says that what is needed above all is bold initiative, and he trusts that this great mass of information will fall under the eyes of economic geniuses who will find in it new and hitherto unsuspected combinations. But the dose seems to be rather indigestible.

After agriculture the authors take up industry and announce a new classification of industry: the old classification was into industries which worked up mineral or metallic utilities, those which furnished food, clothing, transportation, furniture, etc. From the point of view of the geographer, this is not correct. A geography, even though economic, should classify the physical environment; man's utilities should be made subordinate, consequently our authors have adopted three heads: (1) industries derived from the mineral kingdom; (2) industries derived from the vegetable kingdom; (3) industries derived from the animal kingdom. This classification is pursued throughout the work and applied to all countries in the world.

In respect to comprehensiveness, this book is better balanced than the agricultural geography. Out of 826 pages, 152 are devoted to France, 228 to the rest of Europe, 102 to Asia, 28 to Oceania, 92 to Africa, and 122 to America. On the whole we have here a well-written, encyclopædic description of the economic geography of the world.

At any rate, after reading these books, one is convinced that the old reproach against French science of knowing nothing outside of France is no longer deserved.

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